

## 中国藓类植物新记录\*

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**摘要:** 在研究新疆喀纳斯自然保护区的苔藓植物时, 发现新疆藓类 4 个新记录, 包括硬叶拟白发藓 *Paraleucobryum enerve* (Thed.) Loesk., 长枝砂藓 *Racomitrium ericoides* (Hedw.) Brid., 弯叶卷叶藓 *Ulota curvifolia* (Wahl.) Lilj. 和柔弱明叶藓 *Vesicularia flaccida* (Sull. et Lesq.) Iwats., 其中弯叶卷叶藓和柔弱明叶藓亦为中国新分布。在文中讨论了它们的形态特性。

**关键词:** 弯叶卷叶藓; 柔弱明叶藓; 中国新记录种

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## New Records of the Mosses in Xinjiang, China

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**Abstract:** During the study of the bryoflora of Kanas Natural Reserve, 4 mosses including *Paraleucobryum enerve* (Thed.) Loesk., *Racomitrium ericoides* (Hedw.) Brid., *Ulota curvifolia* (Wahl.) Lilj. and *Vesicularia flaccida* (Sull. et Lesq.) Iwats. are newly recorded in Xinjiang, and among them the last two species are also found in China for the first time. Their morphological characters are discussed in this paper.

**Key words:** *Ulota curvifolia*; *Vesicularia flaccida*; New records in China

The Kanas Natural Reserve is located at northern border of Xinjiang in 86°54' – 87°54' E and 48°35' – 49°11' N in Altai Mountains in Burqin County, Xinjiang Uyghur Autonomous Region, which connects Haba County at its west and with Russia at its north and Mongolia at its east separately.

In the Kanas Natural Reserve, the natural forests with rich resources, containing about 94 families, 528 genera and 1491 species of the spermatophyte plants as a part of the forest flora of Siberia, have been well preserved and paid great attention by many botanists. In the last several years, we investigated the bryophytes of Kanas in *Pinus sibirica* forest, *Pinus sibirica* and *Larix sibirica* mixed forest, *Picea obovata* forest, *Betula* sp. forest and *Larix sibirica* mixed forest and alpine meadow between

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ca. 1000 m up to 3200 m above the sea level. In Kanas Reservation, we have found about 163 species of mosses, in which 4 species including *Paraleucobryum enerve* (Ther.) Loesk., *Racomitrium ericoides* (Hedw.) Brid., *Ulotia curvifolia* (Wahl.) Lilj. and *Vesicularia flaccida* (Sull. et Lesq.) Iwats. are recognized as new records to Xinjiang, as well the last two are also newly distributed in China or mainland China separately. They belong to 4 families Dicranaceae, Grimmiaceae, Orthotrichaceae and Hypnaceae, and 4 genera *Paraleucobryum*, *Racomitrium*, *Ulotia* and *Vesicularia* are new to Xinjiang too.

The interesting phenomena are that *Paraleucobryum* and *Racomitrium* are frequently found in northern China and the genus *Racomitrium* is widely occurred in whole China, however in Kanas *Racomitrium ericoides* (Hedw.) is the first record in Xinjiang. Concerning the genera *Ulotia* and *Vesicularia* in Kanas, they show very special distribution in China, and both of them were mostly found in southern China up to date. In details, *Ulotia* contains 5 species in China, that 2 species of them are only known in Yunnan, Sichuan and Taiwan. However, *Vesicularia* has about 15 species in China and 11 species have been found in Hainan, Taiwan, Hongkong, Yunnan, and only 4 of them are also occurred in Shanxi, Shandong, Liaoning and Inner Mongolia separately.

The records of the above 4 moss genera, especially *Ulotia* and *Vesicularia* are not only increased the number of the bryophytes in Xinjiang, but they also show very peculiar distribution phenomena there.

It seems that the climate of Kanas was not cold and dry as those of present time there. Kanas might be proposed that it was a subtropical region before Tertiary, even it is located at the northern boundary of Xinjiang, and the species of *Ulotia* and *Vesicularia* occurred in rather wide area in Xinjiang before. At present, *Ulotia* and *Vesicularia* grow still at rather lower elevation in Kanas, therefore Kanas is an very interesting region, in which the bryoflora is necessary to be further studied, and probably more interesting new records of the bryophytes will be found in Kanas and Xinjiang.

In the following paragraphs, 2 species which are newly distributed for China are introduced.

# 1. *Ulotia curvifolia* (Wahl.) Lilj., Utk. Sv., ed. 3: 546. 1816. (Fig. 1: 1-6)

*Syn. Orthotrichum cirratum* Bernh. ex Web. et Mohr, Bot. Taschew. 237. 1807.

*O. curvifolia* Wahl., Fl. Lapp. 365. 1812.

*Ulotia americana* Mitt., Journ. Linn. Soc. London, Bot. 8: 26. 1865.

*U. cirrata* (Bernh. ex Web. et Mohr) Grout, North Amer. Fl. 15 A(1): 28. 1946.

Habitat: on rock, in *Larix siberica*, *Pinus siberica* and *Betula* sp. mixed forest.

Specimen examined: China, Xinjiang Uyghur Autonomous Region: Kanas Natural Reserve, Burqin Co., M. Sulayman K151 (XJU, HIRO, PE).

This is the first record of this species in China. Previously *Ulotia curvifolia* (Wahl.) Lilj. is widely distributed from Greenland to Alaska including North and Central Europe and Altai (Siberia). The specimen K151 is small-sized with rather sharp leaf apice, and its leaf cell walls are very thick.

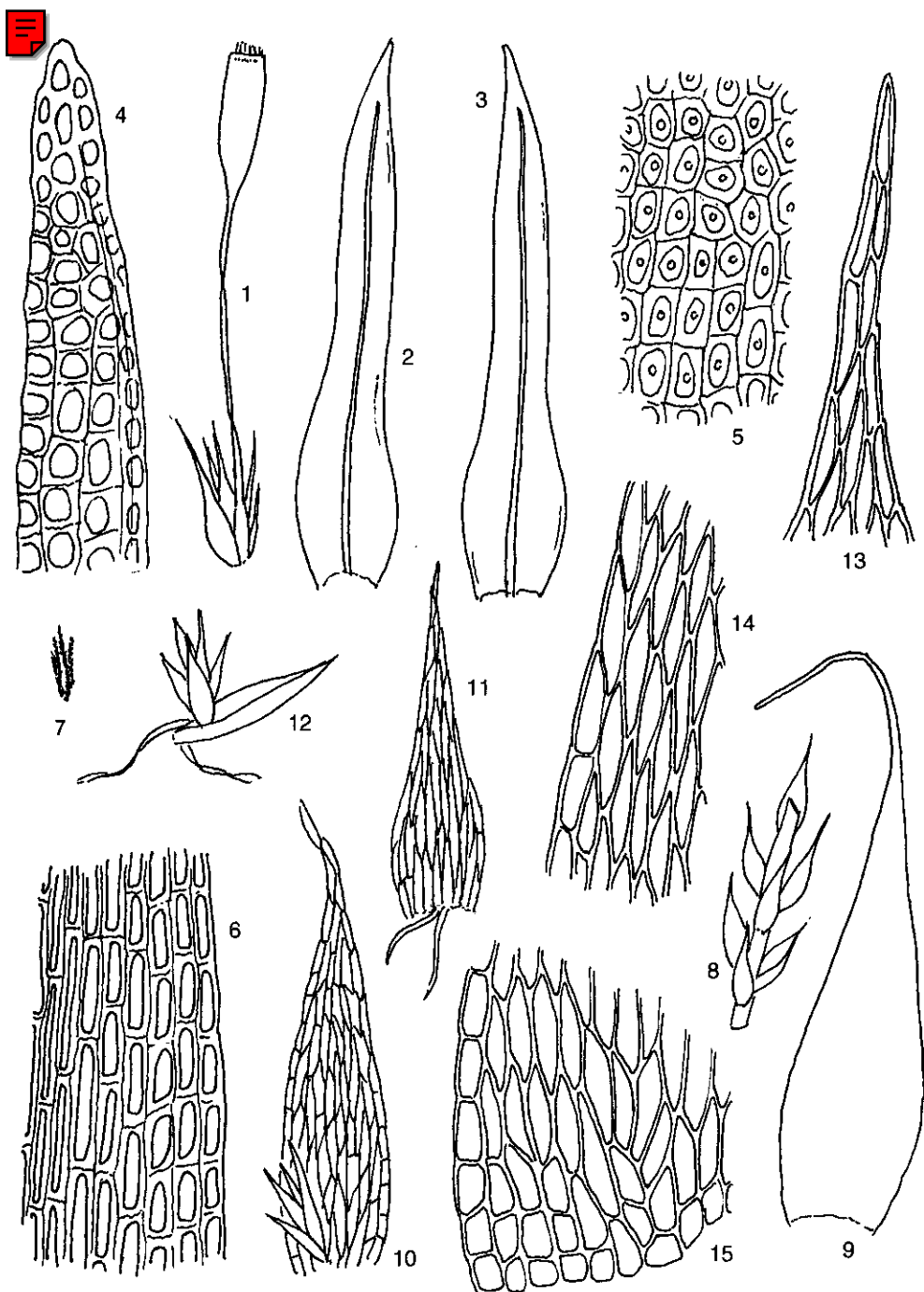


Fig. 1 1-6. *Ulota curvifolia* (Wahl.) Lilj. 1. female plant ( $\times 20$ ), 2, 3. leaves ( $\times 30$ ), 4. apical leaf cells ( $\times 230$ ), 5. median leaf cells ( $\times 230$ ), 6. basal leaf cells ( $\times 230$ ). 7-15. *Vesicularia flaccida* (Sull. et Lesq.) Iwats. 7. plants ( $\times 0.8$ ), 8. portion of stem ( $\times 16$ ), 9. leaf ( $\times 112$ ), 10-12. leaves, showing buds and rhizoids at the bases of leaves ( $\times 64$ ), 13. apical leaf cells ( $\times 234$ ), 14. median marginal leaf cells ( $\times 234$ ), 15. basal leaf cells ( $\times 234$ ).

**2. *Vesicularia flaccida*** ( Sull. et Lesq. ) Iwats. , Journ. Hattori Bot. Lab. **26** : 70 , f. 3. 1963. ( Fig. 1 : 7 – 15 )

*Syn. Hypnum flaccidum* Sull. et Lesq. , Proc. Amer. Ac. Arts Sc. **4** : 280. 1859.

*Vesicularia leptoblasta* ( Broth. et Par. ) Broth. in Engler et Prantl , Nat. Pfl. **1** ( 3 ) : 1093. 1908.

Habitat : on moist rock in *Pinus siberica* and *Picea obovata* mixed forest.

Specimen examined : China , Xinjiang Uyghur Autonomous Region : Kanas Natural Reserve , Burqin Co. : M. Sulayman K12 ( XJU , HIRO , PE ).

The plants of *Vesicularia flaccida* ( Sull. et Lesq. ) Iwats. in Xinjiang are much slender and the interesting characters of it are the buds and rhizoids frequently growing at the bases of leaves. The leaf apice are long and sometimes haired , however the leaf cells are normal.

This species is widely occurred in Japan , and Noguchi ( 1994 ) mentioned that it also distributed in Taiwan Province of China. We haven 't seen the Taiwan specimen , but at least the record of *Vesicularia flaccida* ( Sull. et Lesq. ) Iwats. in Xinjiang is the first record in mainland China.

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